ABSTRACT

A search engine architecture is designed to handle a full range of user queries, from complex sentence-based queries to simple keyword searches. The search engine architecture includes a natural language parser that parses a user query and extracts syntactic and semantic information. The parser is robust in the sense that it not only returns fully-parsed results (e.g., a parse tree), but is also capable of returning partially-parsed fragments in those cases where more accurate or descriptive information in the user query is unavailable. A question matcher is employed to match the fully-parsed output and the partially-parsed fragments to a set of frequently asked questions (FAQs) stored in a database. The question matcher then correlates the questions with a group of possible answers arranged in standard templates that represent possible solutions to the user query. The search engine architecture also has a keyword searcher to locate other possible answers by searching on any keywords returned from the parser. The answers returned from the question matcher and the keyword searcher are presented to the user for confirmation as to which answer best represents the user's intentions when entering the initial search query. The search engine architecture logs the queries, the answers returned to the user, and the user's confirmation feedback in a log database. The search engine has a log analyzer to evaluate the log database to glean information that improves performance of the search engine over time by training the parser and the question matcher.